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ABSTRACT

A 120-item questionnaire measuring sex-role behavior and attitudes, educational expectations, self-assessment, grades, etc. was administered to 3000 students in the 7th through 12th grades in three school districts. "Academic competence" was defined as the discrepancy between actual and predicted grade averages based on the correlation of scholastic aptitude and grades in the sample. Girls were found to be superior to boys in average academic competence at every grade level. Grade averages declined for both sexes between the 7th and 12th grades. Girls were also higher in average academic competency in each of six social class levels. No sex differences were apparent in the accuracy of self-assessment of schoolwork or in post-high school educational plans, even after an analysis by age groups. Students exhibited traditional sex-role stereotypes and girls reported engaging in more non-assertive behavior than boys. The study found no support for the conventional wisdom regarding the development of sex differences in the achievement patterns of adolescents. Interesting patterns did arise, however, in the relationship of sex-role related characteristics with these variables of achievement orientation. (Author)

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Paper presented at the Annual Meeting of the American Educational Research Association San Francisco, April, 1976.

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Psychosocial Dimensions of Sex Differences in the Academic Competence of Adolescents*

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This study is designed to investigate some psychosocial dimensions in the patterns of scholastic achievement of adolescent males and females. We are particularly interested in the correlates of sex differences in the academic performance of junior and senior high school students. By looking at the relationship of social variables to achievement, we might gain a better understanding of under and overachievement and identify the developmental patterns associated with varing styles of school performance.

Barriers to the fulfillment of an individual's potential can result in both personal and social losses. This loss may be in terms of lack of achievement, or in conflicts accompanied by psychic costs. Personal achievement is highly stressed in American society. Recently, there has been an increased sensitivity to the problems of achievement in women. Much has been written in professional and scientific journals concerning alleged differences in the achievement patterns of boys and girls. Greater knowledge of these differences and their antecedents could promote more extensive development of each individual's capabilities. In addition, a better relationship between the sexes may come about through the investigation of sex differences. The educational system may need to modify its institutional demands to adapt to the needs of both sexes.

Some of the generally accepted truths concerning males and females are that men achieve for power and status while women are motivated by affiliative needs (the need for social approval); that women's achievement declines after puberty; that self-deprecation is a feminine characteristic; that while achievement brings glory to men, excellence results in conflicts in women. It is the purpose of this study to explore some parameters behind the varying patterns of academic performance and test how applicable the conventional wisdom is to the adolescent stage of development.

Academic performance is a predominant form of achievement for most individuals throughout adolescence. Many individuals strive only for a minimal level of competence to meet societal requirements, not wishing to excel. However, as grades are symbolic of standards and there is much pressure for achievement in this society, we can probably assume that for the majority of adolescents, academic performance is a major concern. Finally, students who do not achieve in school are unlikely to attain high educational and occupational levels. Academic performance in high school is the most powerful

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predictor of achievement in college (Lavin, 1965) and is a good indicator of adult achievement (Kagan and Moss,1962)

Literature Review

Sex Differences in Academic Performance.

A pervading theme in discussions of the academic performance of males and females is the decline of achievement of girls beginning with puberty. Most of this literature attempts to explain why girls do not achieve up to their ability or experience conflict when they do excel. Explanations include such concepts as the image of non-achieving female adult models, socialization patterns, sex role identification, discrimination and conflicting motives.

Girls, on the average, receive better grades than boys throughout elementary and high school (Douglass and Olson, 1937; Northby, 1958; Coleman, 1961; Maccoby, 1966). Northby found that twice as many girls as boys were in the top ten percent of their high school classes with twice as many boys in the bottom ten percent. Although performance as measured by grades consistently favors girls, there is a lack of sex differences on most standardized achievement tests (Carter, 1952; Tyler, 1965). Furthermore, there is no consistent evidence that girls have more scholastic aptitude than boys (Clark, 1959; McCandless, Roberts and Starnes, 1972), This is not surprising since most standardized aptitude tests are designed to show comparable average aptitude scores for males and females (Tyler, 1965).

The conformity of girls to the institutional demands of the school apparently continues through the high school years. Gough (1953) believes that independence is not valued in the educational institutions until college. In a survey of 11th graders, Tillery, et al. (1969) found that more girls than boys say that they try to get A or B grades and a greater percentage of the girls say that it is important to get good grades. However, Campbell (1974) found that girls who saw themselves as closer to the ideals of femininity and passive as 12th graders appeared to have declined in aptitude from the 7th grade as measured by a standardized test.

Much of the recent literature states that girls begin to decline in performance as they get older. Pressure to conform to sex roles increases as boys and girls progress through school As females become more aware that future roles may not include achievement, they may internalize the low expectations the culture has for women (Stein and Bailey, 1973; Lavach and Lanier, 1975). Feminine anxiety over competitive achievement has received much attention and the reward system of heterosexual activities is said to result in conflict over achievement. Typical of the comments are:

> From the very beginning of adolescence girls, as potential heterosexual partners, begin to be punished for conspicuous competing achievement and to be rewarded for heterosexual success. (Bardwick and Douvan, 1971, p. 230)

> Intellectual achievement is common among pre-adolescent girls, but many are recruited to affiliative systems during adolescence. (Lee and Gropper, 1974, p. 383)

> During early adolescence boys show an increasing devotion of energy to the instrumental area (achievement and independence) receiving in return approval to support the sense of competence and response to support the sense of self-determination. Girls are increasingly directed toward the expressive area, especially development of interpersonal skills, which yield approval... (Gordon, 1971, p. 945)

While intellectual competition may be acceptable in elementary school, girls supposedly learn that they will be punished for academic achievement in high school (Bardwick and Douvan, 1971). Girls may be anxious about being competitive because competition is associated with aggression (Kagan, 1964). Maccoby (1963) reports that the traits of independence and striving necessary for intellectual achievements are associated with anxiety in girls. Taylor and Farquar (1965) found sex differences in personality traits related to achievement. "Feminine" personality traits such as dependency and non-assertiveness are said to be inconsistent with excellence (Stein and Bailey, 1973). As an example of the interaction of sex and personality, Maccoby (1966) hypothesized that levels of anxiety would result in different levels of performance depending on the sex of the student, though there would be considerable overlap. Extraverted girls and introverted boys were the most successful students in a study by Entwistle and Cunningham (1968). We might ask what types of behaviors in boys and girls are differentially reinforced by teachers.

In a review of the literature, Lavin (1965) concludes that present research has not shown personality variables to be very useful in the prediction of achievement. He criticizes current research for conceiving of the "individual as if he were operating in a social vacuum (p. 111)" and for not studying personality in relation to sex and social variables.

In a study of college women, Broverman, et al. (1972) found that a male-valued cluster traits reflected competency while the female stereotypic items reflected warmth and expressiveness. Komarovsky (1953) described reports from college females about receiving advice against the public display of their intellectual abilities. And Reisman (1956) concluded that sex-role norms inhibit the achievement of college women. In a study of 10 to 16 year olds, Lambert (1971)

found that girls who respond in traditional ways to sex role stereotypes have poorer academic performance. Furthermore, the relationship between poor achievement and high sex role differentiation was stronger for the older females in the study. There was no association between stereotypic thinking and school grades for males, however, a finding consistent with the idea that sex typing should have an effect on female but not male achievement.

Five major reasons are found in the literature in attempts to explain a decline in the academic performance of adolescent females. One is based on the changing perceptions of the school as a feminine institution. With an increase in the proportion of male teachers and the introduction of courses such as mathematics and science, males supposedly can more easily identify with the school curriculum and with adult models in the school. Perhaps boys can take a more pragmatic view toward the high school curriculum than toward the demands of the elementary school. Furthermore, if boys and girls have developed different competencies from past socialization practices, the courses in high school may favor the developed abilities of boys over girls (Stroud and Lindquist, 1942).

A second reason is based on the future roles of teenagers, as males become oriented toward vocational goals and females perceive the domestic tasks of society's projection of the non-achieving woman(Janis 1969). Douvan and Adelson (1966) emphasize the perception of future roles as influencing present academic performance. Males and females are thus influenced by different drive systems as boys are pressured toward vocations. The theory goes that while boys are worried about their achievement in relation to occupational aspirations, girls are more concerned with affiliation activities. In contrast to boys, girls place a greater value on social relationships in preparation for marriage (Levy, 1972).

As students get older, we can expect them to have an increasing awareness of the importance of grades for entrance into college. Their options will narrow as their perspective towards the future involves more planning and goal-setting. Douvan and Adelson (1966) state that "the adolescent adaptation directly depends on the ability to integrate the future to their present life and current self-concept" especially in this goal oriented society (p. 229). Educational and vocational orientations are narrowed by one's sex-role concept, self-identity and present social status (Elder, 1968). We might expect some ambivalance to be associated with females' orientations toward some combination of domestic and achievement goals. Strickland (1971) believes that girls may lower their aspirations to protect themselves while boys may be encouraged to aspire beyond their abilities.

With regard to actual attendance, there is an equal likelihood of higher class boys and girls attending college. But in the lower strata, girls are less likely than boys to get a higher education. The pattern is similar in terms of ability. Boys and girls of high ability are likely to go to college, but low ability boys have a greater chance for higher educational attainments than low ability girls (Werts, 1966; Cross, 1971). However, no sex differences have been found in the relationship of SES and expectations once achievement is controlled for (Douvan and Adelson, 1966; Harrison, 1969)

We might expect that parents' expectations would play a role in the plans of their sons and daughters. High school students who perceived their parents as wanting them to have higher educational attainments reported higher educational aspirations themselves. Using data from the Equality of Educational Opportunity Survey, Gordon(1972) concluded that 9th grade boys were more likely than their female counterparts to perceive high parental educational expectations.

Another reason for the supposed decline in adolescent girls' achievement is an energy model where females invest more of their time in heterosexual activities than in intellectual pursuits. Hoffman (1972) believes that performance diminishes when the achievement drive conflicts with affiliative needs. According to Douvan add Adelson (1966), achievement-oriented girls begin dating at a later age, and then date less once they start. Using Project Talent data, Vockell and Asher (1972) found that seniors of high ability or high achievement dated less. Grinder (1966) hypothesized that strong involvement in dating means less dedication to school responsibilities. Although he found support for this hypothisis in a sample of 10th to 12th graders, there was no sex difference in the association of high performance and less dating behavior.

From a different perspective, we might expect the socially mature and active adolescent to be a high achiever. If the interpersonal sphere is central to female adjustment, then the girl who is socially immature and rejecting of her femininity may be a troubled adolescent. Girls who have integrated adult concepts of the feminine role and are higher on a female development index were found to have stronger egos (Douvan and Adelson, 1966). This healthier and more secure personality may contribute to better achievement. Heterosexual activity may reduce anxieties and offer psychic support to school performance (Coleman, et al.. 1974). Finally, interpersonal skills may be considered a form of achievement rather than fulfillmnet of a separate affiliation drive (Stein and Bailey, 1973)

Fourth, females' anxiety over competing may result in conflicts over intellectual striving, as mentioned above, and this will inhibit academic excellence. Finally, there is the hypothesis that little girls work for love and approval while boys are concerned with mastery of tasks (Hoffman, 1972). This was mentioned before as a reason for girls obtaining better grades in the elementary schools. It is said that high schools take a more pragmatic view toward learning (Kagan, 1964a) and therefore boys with their instrumental skills have an advantage. Crandall (1963) asserts that young boys and girls work for love and approval but then the boys internalize the striving for

excellence as girls continue to work for social approval. Bardwick and Douvan (1971) write that while boys learn to achieve by proving their masculinity, the pre-adolescent girl does not have much to do to prove herself. While boys are developing an instrumental competence girls are learning to accommodate to the school's demands and reward systems (Lee and Gropper, 1974).

Research into the decline of females' achievement during adolescence has been scarce. Two of the most cited studies (Shaw and McCuen, 1960; Raph, et al. 1966) were actually carried out with students of superior ability, although this aspect of the research is rarely stated.

Shaw and McCuen found in a longitudinal study that the pattern of poor performance in underachievers in the male group began in the third grade while underachievement in females did not start until the sixth grade. That is, girls who received poor grades in high school had not underachieved during the elementary levels. Thus, the study is often cited as an expmple of the decline in the performance of girls beginning with puberty. Raph, et al. concluded from their study of bright underachievers that the proportion of females underachieving in relation to the number of male underachievers increases during the high school years and into college. However, the small number of subjects and their unusual level of ability limit the generalizability of these studies.

In her review of research on sex differences, Maccoby (1966) refers to the pattern of pressures on female and male achievement as a reverse time sequence. As the pressure for achievement increases with age for males, the pressure declines for females. It is not clear, however, that the reasons offered for a decline in the performance of women are valid during adolescence. A girl who fits the social definition of her sex might be expected to be better adjusted and therefore better prepared to achieve, at least in the educational setting before entrance into college. Patterns of behavior might then be examined to see if there are any conflicts present in female achievers. In addition, there is some doubt as to whether conformity or independence is more desirable in the high school setting. Therefore, the greater tendency of girls to work for approval may still be of value in obtaining better grades than boys by fulfilling the student stereotype in high school.

The relationship of achievement motivation and performance has been inconsistent for females, though, perhaps due to measurement problems (Entwisle, 1972). Using a Thematic Apperception Test, Lesser, Krawitz and Packard (1963) found that achieving females considered achievement more sex appropriate than did underachievers. There was an increase in achievement motivation when the achieving girls were presented with feminine stimuli. In contrast, the motivation of the underachieving girls increased when they were shown male stimuli. Lesser, et al.conclude that

> the girl who retains a perception of the female role as including intellectual achievement goals succeeds intellectually under conditions of strong academic competition with other girls; by comparison, the girl who accepts the social prescription that intellectual achievement strivings are relevant to the male role and not the female role does not do as will in intellectual competition with other girls (p. 64).

A "fear of success" motive has also been used to describe the patterns of achievement in some women (Horner, 1972). Horner believes that achievement is thwarted because females are anxious over the negative consequences of excellence such as social rejection and feelings of the lack of femininity. But there are inconsistent results regarding sex differences and age trends in the motive to avoid success, especially when younger students are the subjects (Horner, 1972; Maccoby and Jacklin, 1974). Baruch (1974), for instance, found that both boys and girls in the 10th grade showed more fear of success than did 5th graders. In a study of high school students, Romer (1975) found no sex difference in the frequency of boys and girls who showed fear of success imagery. This lack of sex differences was also demonstrated in a large study of college undergraduates (Levine and Crumrine, 1975).

Many studies have shown a persistent relationship between self-concept and academic performance (Wylie, 1961; Brookover, Erickson and Joiner, 1967; Purkey, 1970). With regard to sex differences, Bledsoe (1964) and Campbell (1966) report that boys have a higher correlation between self-concept and academic achievement than do girls. In experiments using expectancy of performance as a measure of self-evaluation, Crandall (1969) found that elementary school and college females tended to underrate themselves as much as males overestimated their own abilities. Other studies have also found that girls appear to deprecate themselves or have lower expectations (Hoffman, 1972; Maccoby and Jacklin, 1974). Rosenkrantz, et al. (1968) report that college females see themselves as less desirable than males. Broverman, et al. (1968) explain this as resulting from women incorporating aspects of the sex role stereotype of females as nonachieving and noncompetitive. There are several interpretations to the discrepencies between performance and self-assessment. Self-reports may not be truly indicative of one's self-evaluation if girls are more modest while boys are defensive because of cultural pressures for achievement. Girls may set higher standards than boys, or females may be more realisitc while males inflate their self-estimates (Crandall, 1969). However, in contrast to these studies is the finding by Brookover, Thomas and Paterson (1964) that there were no sex differences in the correlation of self-concept and school grades in a sample of high school students.

Measurement of Achievement

The measure of academic achievement used here will be based on students'aptitude test scores and their grades. We will refer to the measure of school performance resulting from the discrepancy between a students' grades and the grades we would estimate he would receive based on aptitude test scores as "academic competence." The term "competence" is borrowed from White's (1959) use of this concept in referring to an individual's efficacy in interacting with one's environment. "Competence" appears to be appropriately used here because this study is concerned with adolescents' efficacy in the school setting. That is, we intend to examine relationships associated with success in meeting the demands of the student role in junior and senior high school.

The reason for using a discrepancy score is that we want to investigate the nonintellective nature of school performance. The discrepancy score is indicative of a student's achievement in school in terms of grades while controlling for ability, that is, aptitude or intelligence. If intelligence is not controlled for, then it can not be said for sure that the associations that are found are independent of ability (Lavin, 1965).

The research that involves some measure of the discrepancy between levels of achievement and ability is usually concerned with under- and over achievement. Various approaches have been developed to control for ability in studies using levels of achievement. Some studies (such as Miller, 1973,; Nuttall, 1972) have used grade point average as the sole criterion of dividing students into levels of achievers. This presents the problem of considering a high ability student who is only obtaining B's as an achiever while also defining the student with low potential who is doing better than could be expected on the basis of ability alone, as an underachiever.

Difference scores involving the subtraction of an ability score from a performance measure have also been used as criteria of achievement. With this technique, a person who is classified in a higher percentile or rank in ability than in performance would be considered an underachiever. This method, however, makes two assumptions that rarely, if ever, hold to be true. We will now discuss these. The first assumption is that there as a perfect correlation between the measures of potential and performance. In reality, the students with the highest grades are not always those with the greatest potential, nor is the reverse necessarily true (Rogoff, 1970). A second assumption is that we can perfectly measure both potential and performance without error. Since this is rarely the case, a phenomenon called the regression effect occurs. Extreme cases on one measure tend to be less extreme on a second measure, i.e., they "regress" toward the average score due to measurement error (Thorndike, 1963).

A further consequence of just using a ranking system is the impossibility of a student in the highest rank being considered an overachiever and conversely, a student in the lowest division can not be classified an underachiever.

The discrepancy between actual and predicted performance will be used here as a measure of academic competence. This strategy avoids the problems of absolute of difference scores, while also taking into account a student's ability (Thorndike, 1963; Lavin, 1965,; Rogoff, 1970). The predicted score is based on the actual correlation between observed aptitude and observed grades in the sample. Since the regression of grades onto aptitude results in a best fit line, the predicted score is an unbiased estimate and no regression effect can occur. The predicted grade is the average achievement for the particular aptitude level (Thorndike and Hagan, 1969). There is an equal likelihood(within statistical limits) of positive and negative scores at each ability level since the predicted score is an average for a given aptitude. The discrepancy score between observed and predicted performance results in positive scores for students who are doing better than we would predict on the basis of aptitude alone, and negative scores for those who are doing poorer than estimated from aptitude. Under- and overachievement in this definition is expeessed as the inability of an apiitude and performance. This measure of academic performance has been referred to as "relative achievement" because it is the achievement of the student relative to what would be predicted from his aptitude score, or "that part of the total achievement which is independent of a pupil's intelligence (Svensson, 1971, p. 19)."

Grades are proposed as the major criterion of academic performance in this study. Admittedly, there are some problems associated with the use of grades as a criterion. Subjective factors involved in teachers' evaluations are not present in standardized tests. Teachers may use different criteria and standards in assigning marks in various courses or track levels. Grades may even be considered as "rewards" resulting from the student-teacher interaction (Lavin, 1965). However, we may not need to consider these factors solely as errors in measurement, but rather as extraneous influences which need to be studied. Whereas students rarely see the results of standardized tests (until the college entrance examinations late in school), it is hard for a student to escape the infuuence of the black and white measure of a report card even with the subjective components of grades. Although an imprecise measure because of different standards among schools, courses, track levels and teachers, grades also have the advantage of being a function of the student's adjustment to the school and his academic role along with his ability. In using grades, we are concerned with the striving for academic excellence in terms of the symbolic rewards of the school setting. Grades can define degrees of competence and incompetence in terms of the student role in the school institution. While standardized tests may require only an hour or two of sustained effort, grades reflect a student's

motivation over a considerable length of time. In addition, the grade point average is a greater sample of a student's behavior, being a composite of several courses and teachers over a long period of time, than an hour or two in a standardized test setting. Finally, girls receive better grades than boys even when average scores are equivalent on standardized tests (Tyler, 1965).

Method

A questionnaire was administered to 3000 students in three school districts in the southern tier of New York State. This was about one-third of the students in the 7th through 12th grades. In order to achieve a representative sample of students in the various tracks, a stratified sample of the English classes was used where schools had a tracking system. Generally, two-thirds of the English classes were classified as "Regents" or "Academic" and one-third as "Nonregents"or "General". Although no student was forced to participate in the survey, neither was participation posed as a voluntary activity. Additional data were collected from student folders and computer printouts of previously administered aptitude and achievement tests.

The theoretical reasons for the academic competence measure were discussed above. The academic competence score is a deviation score defined as the difference between actual GPA and predicted GPA:

Academic Competence = Actual GPA - Predicted GPA

The predicted GPA is based on the relationship between the actual grades in the sample and the scholastic aptitude test scores. The correlation of grades and aptitude in the present sample is .46. We can set up a regression equation with y = predicted GPA and x = observed scholastic aptitude. When GPA and scholastic aptitude are standardized into z-scores, the intercept in the equation drops out and the coefficient for x is equal to the correlation between GPA and scholastic aptitude (Kerlinger and Pedhazur, 1973). $Y = .46x$ is the best prediction line between GPA and scholastic aptitude for our sample. The correlation between GPA and scholastic aptitude is the slope of this theoretically best fit line. Placing this prediction equation into the equation for the academic competence measure, we obtain:

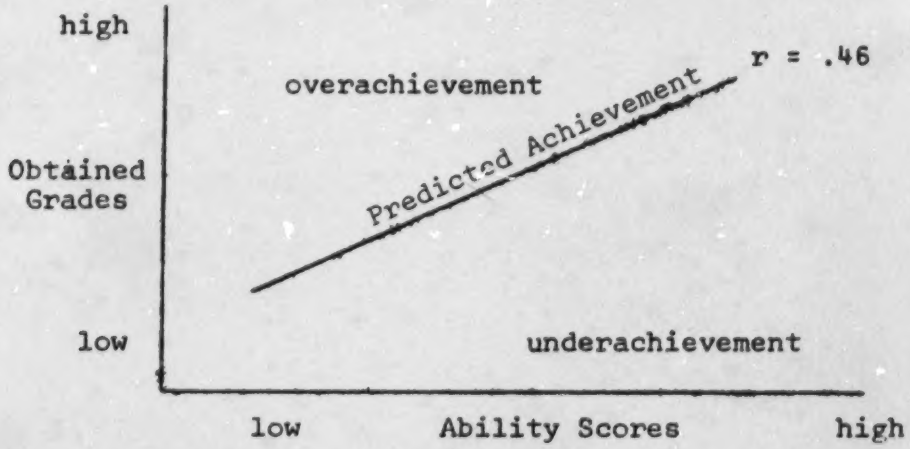
Academic Competence = Standardized GPA - .46 X Standardized Aptitude

A positive academic competence score would indicate that the student is obtaining higher grades than we would predict on the basis of his scholastic aptitude; while a negative score would show poorer performance than predicted by a scholastic aptitude test. (see Figure 1). The greater the distance between zero and the academic competence score, the worse the prediction based on aptitude alone.

This academic competence score can also be thought of in terms of over- and underachievement, as discussed above. Table 1 shows some actual academic competence scores in terms of the student's reported GPA and his aptitude score.

Figure 1

Correlation of Ability Scores and Obtained Grades



(Adapted from Lavin, 1965)

Table 1

Examples of 'Academic Competence Scores

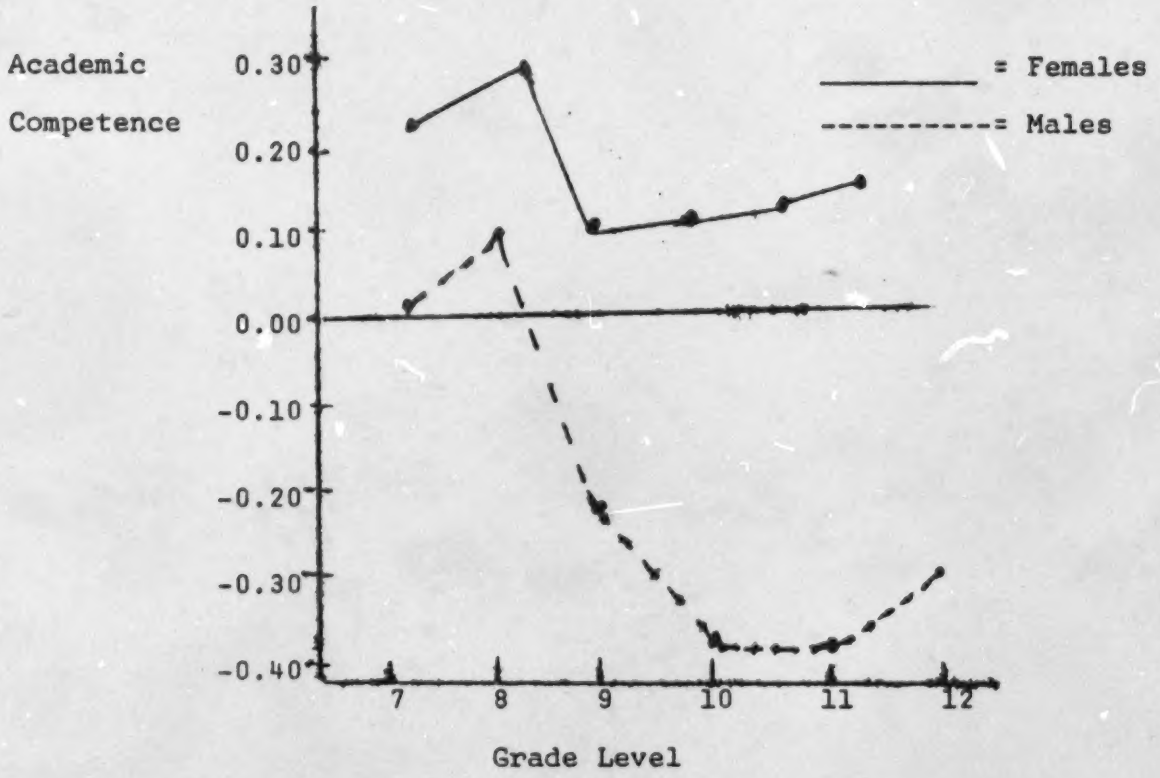
Deviation Score	Aptitude	Reported GPA
-0.68	119	'Mostly B & C'
-0.05	119	'Mostly B'
0.58	119	'Mostly A & B'
-0.09	141	'Mostly A & B'

Results

Much of the literature cited above would predict that the achievement of adolescent girls would decline as they progress through high school. Figure 2 is based on the average academic competence score for each grade by sex.

Figure 2

Academic Competence by Sex and Grade Level



It is apparent from Figure 2 that girls as a group do better in terms of academic competence than would be estimated from the scholastic aptitude test scores while boys generally do poorer. At every grade level, girls have a higher average in academic competence than boys. The difference for each grade level is shown in Table 2. Although there is a decline in academic competence for females between the youngest and oldest groups, the change is even more dramatic for males. For both groups, there is a large drop in competence between the 8th and 9th grades. (Further analyses showed that this is not due to the transition from junior to senior high school setting.) The average scores for females remain fairly stable after the 9th grade. There is no evidence from these data to support the conclusion that girls as a group redirect their energies away from school performance during adolescence more so than their male counterparts. Furthermore, the academic competence of males does not appear to increase as it could be expected to if school is increasingly seen as relevant to males' futures.

Table 2

Academic Competence by Grade Level

Grade Level	Sex Difference in Means
7	0.23
8	0.18
9	0.30
10	0.49
11	0.50
12	0.46

We then looked at the relationship of social class (using Hollingshead's (1957) classificatory system) to the academic competence scores by sex. As could be expected, the average academic competence score does increase for males and females as SES increases (see Figure 3). It is striking, however, that girls maintain their superiority in every social class. We had predicted that the academic performance of higher social class boys and girls would be closer than that of the lower classes. This prediction followed from Kohn's(1969) finding that working class parents distinguished to a greater extent between their treatment and values for boys and girls than did middle class parents. The average scores do not converge as expected. These results are also in contrast to Coleman (1961) who stated that academic performance becomes more appropriate for males as SES increases, in the sense that the pattern of sex differences in the present study is similar for all social classes. In examining the social class results in general, we find agreement with Hollingshead's conclusion that the difference in intelligence scores is not sufficient to explain varying levels in students' performance among SES levels (the academic competence scores controlling for aptitude)(1975).

In the introductory section, we discussed the literature that concluded that girls are more modest in their self-evaluations. A further suggestion was that girls may be more or less accurate than boys in their self-assessments. To examine this aspect of academic performance, we correlated students' assessment of their schoolwork with their academic competence scores. As shown in Table 3, there is very little difference in the correlations for the males and females by grade level, with the exception of the 12th grade males. In addition, there is quite a bit of consistency by age groups. Our results are in contradiction with some other findings that show girls under-estimating their abilities and achievements in comparison to boys (Bledsoe, 1964; Brim, 1969; Campbell, 1966; Crandall, 1969). In light of different methods of study, however, we must be cautious in comparing the present results with the con-

Figure 3

Academic Competence by Sex and Social Class

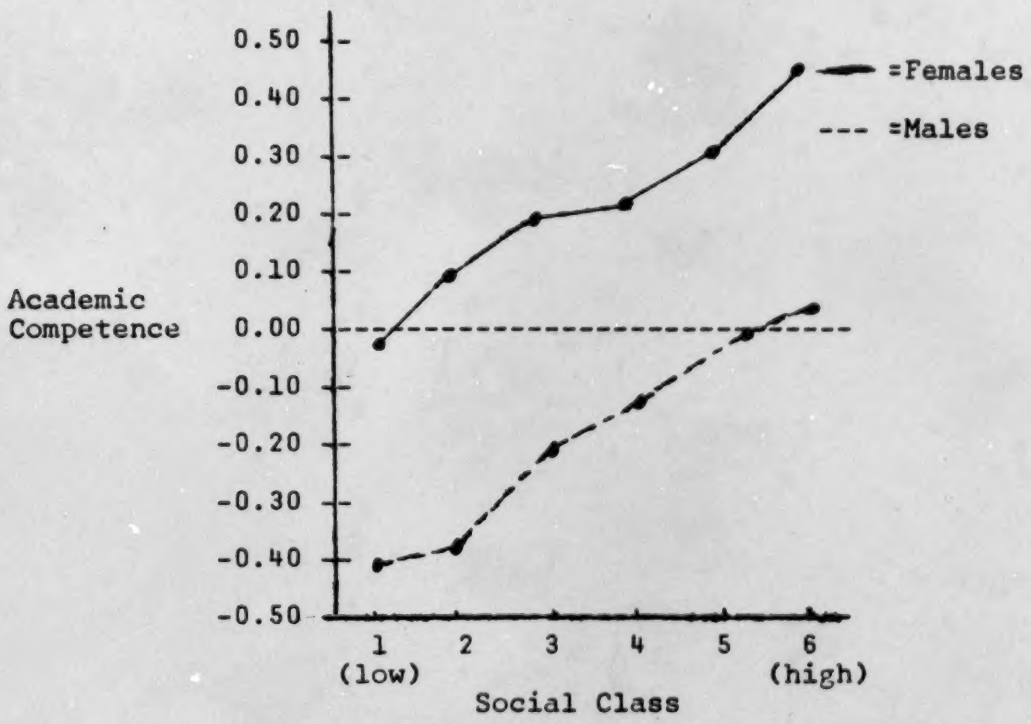


Table 3

Correlations of Self-assessment and Academic Competence by Sex and Grade Level

Grade Level	Females	Males
7th	.54	.62
8th	.61	.60
9th	.56	.60
10th	.52	.60
11th	.56	.63
12th	.59	.46

clusions of other research on the self-concept. The present data, though, do suggest that girls may be as accurate as boys in assessing their performance in the school setting.

One's expectations for the future have been considered to be an expression of achievement orientation. The individual's values for academic achievement are reflected in his educational expectations. It has been argued that adolescent girls begin to see school as irrelevant to their futures as they prepare for marriage. On the other hand, the literature also states that school becomes more relevant to boys as they orient themselves toward college and occupations. In the present research, students were asked how far they actually expected to go after high school in their schooling. Table 4 shows the mean educational expectations by grade level for each sex. The means indicate that students on the average expect

Table 4

Mean Educational Expectations
by Sex and Grade Level

	7th and 8th grades	(N)	9th and 10th grades	(N)	11th and 12th grades	(N)
Females	3.7	(403)	3.5	(451)	3.5	(444)
Males	3.6	(383)	3.6	(457)	3.5	(460)

to attain an educational level between post-high school training and graduation from a four-year college. There is no statistical difference between males and females on the whole ($t = 0.24$). Furthermore, the breakdown by age does not appear to bring out any meaningful differences between the sexes in average scores. Both boys and girls experience a very slight decline in expectations between the youngest and oldest groups. By the 11th and 12th grades, girls and boys have the same mean post-high school educational plans. It is in this oldest age group that we would expect the greatest sex difference if one is to believe the literature on sex differences.

Table 5 shows the correlations between the academic competence measure and educational expectations. Again, the differences between the male and female groups are negligible. It is interesting to note that the relationship of school performance and education expectations does not increase with age.

Table 5

Correlations of Educational Expectations and Academic Competence by Sex and Grade Level

	7th and 8th grades	9th and 10th grades	11th and 12th grades
Females	.36****	.24****	.29****
Males	.34****	.24****	.35****

****$p < .001$

It was noted in the introduction that heterosexual activities take on more importance for adolescent girls as they are pressured away from individual achievement and into the affiliative domain. In order to test this idea, students were asked about the frequency of various dating activities. The relationship of this measure of heterosexual behavior and academic competence is shown in Table 6. For no age and sex group is the relationship very

Table 6

Correlations of Heterosexual Behavior and Academic Competence by Sex and Grade Level

	7th and 8th grades	9th and 10th grades	11th and 12th grades
Females	-.07	-.09*	-.11*
Males	-.04	-.15****	.01

*$p < .05$
****$p < .001$

strong. The correlation is strongest for the middle age group of boys. We tentatively conclude from these correlations that dating behavior does not adversely affect the school performance of adolescent females. Furthermore, the relationship of dating activities with academic competence does not appear to reveal much

of a sex difference.

We attempted to measure students' perceptions of sex-role related behavior through items designed to tap stereotypic thinking. Students were asked to respond to three achievement-related traits and to characterize them as "more like a boy," "more like a girl" or "like boys and girls equally." While these items might also tap sexism in adolescents' thinking, our purpose was to see how students would reply that certain behaviors are more appropriate for one sex or the other. Table 7 show the response frequencies for each of the items. When the traits are not seen as characteristic of males and

Table 7

Response Frequencies for Stereotypic Thinking Items by Sex

	More like a Boy	Like Both Equally	More Like a Girl	N
Striving				
Females	26%*	55%	19%	1501
Males	39%	45%	17%	1529
Competence				
Females	21%	58%	21%	1500
Males	44%	44%	13%	1530
Independence				
Females	50%	41%	9%	1500
Males	59%	33%	8%	1522

*Rounded to nearest whole percent.

females equally, there is the tendency to attribute these traits to males. This is true for both sexes, although more so for the boys. With the exception of the "independence" item, about half of the respondents were willing to make a judgement on the basis of sex. The differences are in the direction which could be expected if achievement orientation is thought of as more characteristic of males. Although the items do not refer specifically to academic performance, it is interesting to note that in the school context of the administration of the questionnaire, it is the girl who on the average strives harder and is more competent, in contrast to the pattern of stereotypic responses.

Since our purpose was to find the effect of the adolescents' perceptions of sex-role behavior on academic performance, we found the average academic competence score by sex for the stereotypic thinking items, as shown in Table 8. It was thought that the attribution of achievement-related traits to one's sex, or at least not to the opposite sex, would mean higher achievement. There is the possibility, though, that the better students would be more aware of the cultural stereotypes (Kohlberg and Zigler, 1967). It appears from Table 8 that the girls who respond "more like a girl" or "like both equally" are close in achievement for the striving and competence items with the poorest performance for those

Table 8
Mean Academic Competence for Stereotypic Thinking Items by Sex

	More like a Boy	Like Both Equally	More Like a Girl	F
Striving				
Females	0.07	0.20	0.17	3.01*
Males	-0.22	-0.19	-0.25	0.32
Competence				
Females	0.07	0.19	0.15	1.97
Males	-0.24	0.18	-0.24	0.51
Independence				
Females	0.16	0.17	0.11	0.27
Males	-0.24	-0.17	-0.09	1.30

*$p < .05$

who respond "more like a boy." This pattern is statistically significant for the striving item. The averages for the independence item do not follow the pattern, but perhaps the attribution of this characteristic to boys (as shown in Table 7) is so pervasive that thinking in this way does not affect the academic performance of girls.

This type of analysis was also used with the self-assessment scores. While we find a difference only in the "competence" item (see Table 9), the pattern there is striking. Girls who attribute competence to boys are lowest in the self-assessment of schoolwork measure, while girls are highest in assessing their school performance when they report that competence is a quality more characteristic of

Table 9

Mean Self-assessment for Stereotypic Thinking Items (Females Only)

	More Like a Boy	Like Both Equally	More Like a Girl	F
Striving	0.02	-0.04	-0.02	0.53
Competence	-0.18	-0.02	0.13	9.72****
Independence	-0.04	0.00	0.00	0.37

*p < .001

girls. This difference is more dramatic than the pattern in Table 8 using the academic competence measure.

Non-assertive behavior is said to be more characteristic of females and to increase with age as adolescent girls learn that competitiveness and boldness are unfeminine. Students were asked to respond to three items concerned with acting dumber than one really is, being too shy to raise one's hand when the answer is known and giving up without really trying hard. Reported frequencies were combined into a scale of non-assertiveness. Table 10 shows the mean of non-assertive behavior by sex for each age group. Females

Table 10

Mean of Non-assertive Behavior by Sex and Grade Level

	7th and 8th grades	(N)	9th and 10th grades	(N)	11th and 12th grades	(N)
Females	6.3	(480)	6.6	(508)	6.4	(501)
Males	5.6	(469)	5.9	(515)	6.1	(534)

as a group do report a significantly greater amount of non-assertive behavior than do males ($t = 8.3$, $p < .001$). However, the developmental trend is much more evident for males than females. Non-assertive behavior increases with age for males, although the average for the oldest group of males is still lower than for any of the female groups. In terms of social maturity, it seems that adolescence may be a period when males learn to be less assertive while females maintain their level of non-assertiveness that is present at the beginning of adolescence.

Table 11 shows the relationship of non-assertiveness with academic competence by sex and grade level. It appears that non-assertiveness is associated with poorer performance without

Table 11

Correlations of Non-assertive Behavior and Academic Competence by Sex and Grade Level

	7th and 8th grades	9th and 10th grades	11th and 12th grades
Females	-.13**	-.12**	-.12**
Males	-.17****	-.15***	-.18****

**$p < .01$
***$p < .005$
****$p < .001$

much of a sex or age difference. Although females report more non-assertive behavior than males, the relationship with academic competence is very similar for both sexes. It should also be remembered that girls are superior to boys in academic competence at all age levels even though they may be higher in average non-assertiveness.

Summary and Conclusions

The purpose of this study was to investigate sex differences in the patterns of school achievement of adolescents as they are related to sex role development. School performance (expressed as a deviation score of actual versus predicted grade average), educational expectations and self-assessment of schoolwork were the three dimensions used to tap achievement orientation in the

the study. After a reading of the current literature. it was thought that adolescent girls would tend to conceal their academic competence because of sex role pressures. The study found no support for the conventional wisdom regarding the development of sex differences in academic competence, self-assessment and educational expectations of adolescent males and females. It would appear that the decline in the achievement of females in adolescence is a characteristic of adolescent males, too. There was very little difference in the males and females accuracy of of assessing their school performance. Finally, the boys and girls in the sample were nearly identical in educational expectations in terms of post-high school plans.

Sex role behavior and attitudes were examined through heterosexual behavior, stereotypic thinking and non-assertive behavior. The correlation of academic competence and heterosexual behavior was slight for both sexes and all age groups. About half the sample gave stereotypic responses regarding striving, competence and independence behavior, with the tendency of attributing the characteristics to boys. Females who attributed the quality of striving to girls were highest in academic competence while females who reported that girls are more likely to be competent were highest in the self-assessment of schoolwork. While girls were found to be higher in non-assertive behavior, the average score for non-assertiveness increased with age for males. The relationship of academic competence and non-assertive behavior was similar for both sexes in an age-group analysis.

While the general patterns of achievement have not yielded the expected sex differences, additional analyses are being done to examine the underlying relationships of sex-role development and school performance. The behaviors and attitudes of the adolescents did reflect to some extent the traditional roles of men and women in adult society. The elimination of sexism in texts and curricula, reduction of differential treatment of students by teachers and counselors, and carefully planned workshops may have some impact on sex role development. Yet the schools can not be expected to overcome the effects of mass media, the structure of the occupational world and the messages of the culture which impinge upon the adolescent. Our findings do demand that we have continued concern for the socialization of girls and boys in terms of sex role development and school achievement.

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